PRINTED IN JAPAN

Emdeko®

ZIG ZAG

CRAFTMANSHIP

# SEWING MACHINE

INSTRUCTION MANUAL

Dear Friend:

Thank you for selecting EMDEKO, we congratulate you for the discretion you have used in choosing the EMDEKO sewing machine as the sewing machine for your sewing pleasure.

This machine has been designed and engineered especially with you in mind, and it is our sincere desire that the performance of this product will prove that your decision will be a wise one.

It is our belief that the user of any product is the best judge of its merits.

We take great pride and gratification in the comments made by thousands of users. Some of the comments stated regarding EMDEKO are, "So simple to use". "So quiet and smooth". "So completely trouble free". "Everything I want in a sewing machine". "It is a pleasure to use", etc.

We are confident that the quality and simplicity of the EMDEKO sewing machine will give you years of sewing pleasure.

Kindest personal regards,

Keith Bigler
Customer Relations Dept.

## CONTENTS


| | | Page |
|---|---|---|
| 1. | MACHINE AND FEATURES ..... (Front) | 1 |
| | (Back) | 2 |
| 2. | BELT ADJUSTMENT | 3 |
| 3. | REPLACING NEEDLE | 3 |
| 4. | REMOVING BOBBIN CASE | 3 |
| 5. | WINDING BOBBIN | 4 |
| 6. | ADJUSTING BOBBIN WINDER | 5 |
| 7. | THREADING BOBBIN CASE | 5 |
| 8. | PEPLACING BOBBIN CASE | 6 |
| 9. | THREADING MACHINE | 6 |
| 10. | PREPARING TO SEW | 7 |
| 11. | ADJUSTING UPPER THREAD TENSION | 8 |
| 12. | ADJUSTING BOBBIN THREAD TENSION | 8 |
| 13. | ADJUSTING FABRIC FEEDERS | 9 |
| 14. | ADJUSTING PRESSURE OF THE PRESSER FOOT | 9 |
| 15. | REGULATING STITCH LENGTH | 10 |
| 16. | ZIG ZAG SEWING | 11 |
| | Regulating Width of Stitch | 11 |
| | Locking Zig Zag Regulating Lever | 12 |
| | Making Patterns | 13 & 14 |
| | Cam Pattern Designs | 15 & 16 |
| 17. | CLEANING SHUTTLE AND RACE ASSEMBLY | 17 |
| 18. | OILING THE MACHINE | 18 |
| 19. | BUILT IN LIGHT | 18 |
| 20. | ACCESSORIES | 19 |
| | A. Cloth Guide | 20 |
| | B. Zipper Foot | 20 |
| | C. Button Sewing Foot | 21 |
| | D. Hemmer Foot | 22 |
| | E. Buttonhole Foot | 23 |
| 21. | BLIND HEMMING | 24 |
| 22. | APPLIQUEING | 24 |
| 23. | EMBROIDERING AND MONOGRAMMING | 25 |
| 24. | DARNING | 25 |
| 25. | CAUSES OF COMMON DIFFICULTIES | 26 |

# 1. MACHINE AND FEATURES

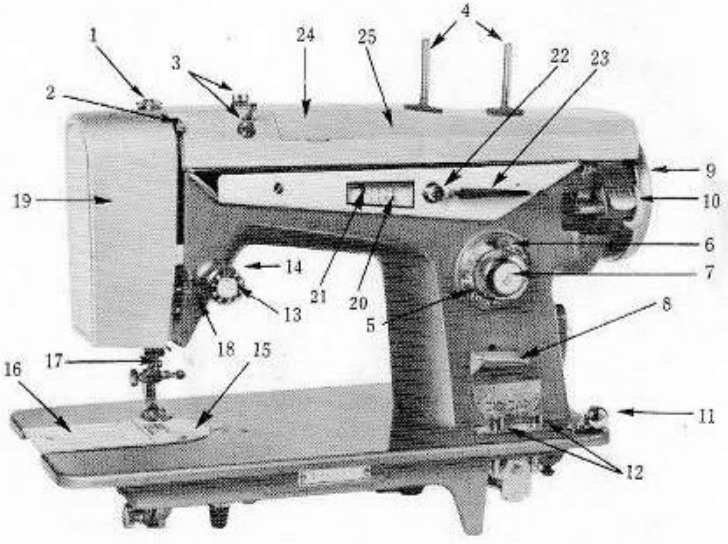



**Fig. 1**

FRONT

1. Built-in Darner
2. Thread Take Up Lever
3. Upper Thread Guide
4. Spool Pin
5. Stitch Length Indicator Plate
6. Stitch Length Indicator
7. Stitch Length Dial
8. Reverse Stitch Control
9. Fly wheel
10. Bobbin Winder
11. Bobbin Winder Thread Guide
12. Fabric Feeder Control Buttons
13. Thread Tension Regulator
14. Thread Take Up Spring
15. Needle Plate
16. Slide Plate
17. Needle Bar
18. Thread Tension Guide
19. Face Plate
20. Zig Zag Indicator Window
21. Zig Zag Indicator
22. Zig Zag Lock & Release Button
23. Zig Zag Regulating Lever
24. Zig Zag Disc Chamber
25. Top Cover



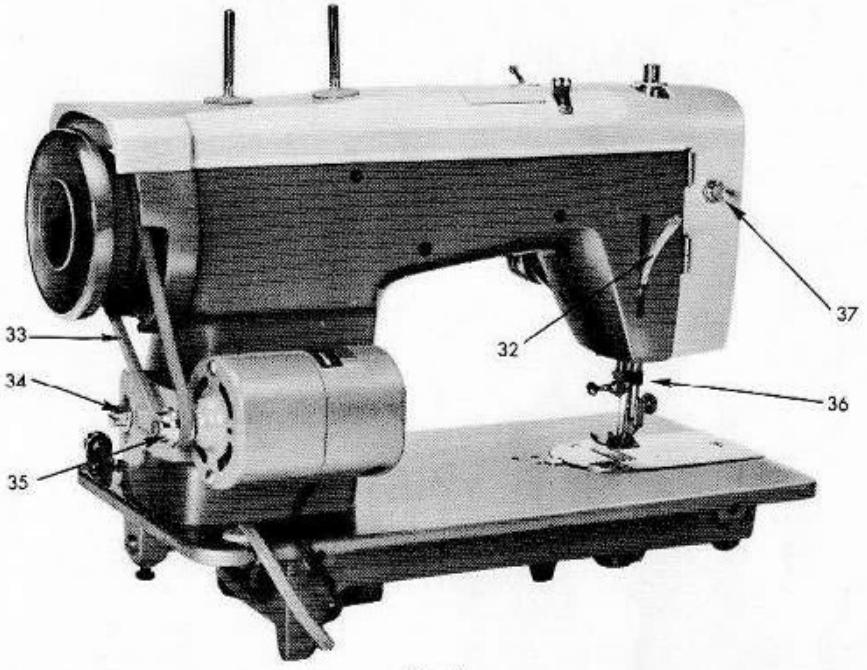



**Fig. 3**

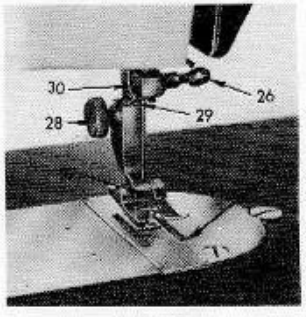



**Fig. 2**

26. Needle Clamp Thumb Screw
27. Presser Foot
28. Presser Foot Thumb Screw
29. Needle Bar Thread Guide
30. Presser Bar
31. Fabric Feeders

BACK

32. Presser Bar Lifter
33. Motor Belt
34. Motor Set Screw
35. Motor Pulley
36. Thread Cutter
37. Sewing Light Switch

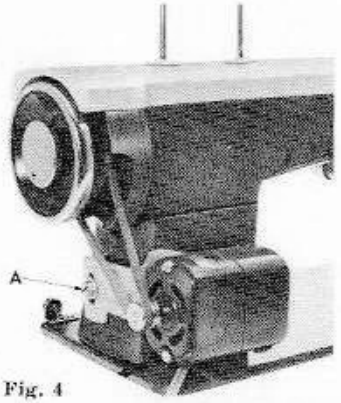



Fig. 4

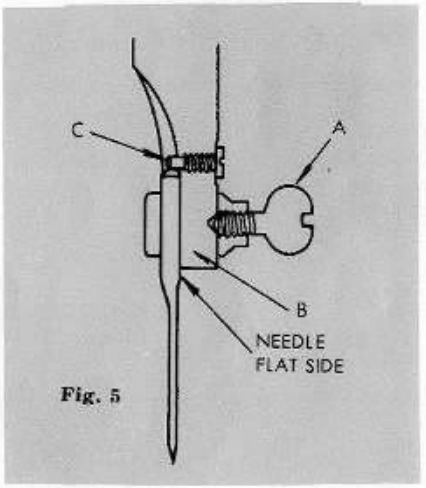



Fig. 5

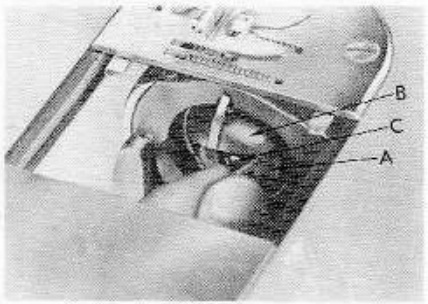



Fig. 6

## 2. BELT ADJUSTMENT

Loosen motor bracket screw (A). Slide motor bracket down to tighten—up to loosen.

CAUTION : Do not tighten belt too tight.

## 3. REPLACING NEEDLE

1. Raise the needle bar to its highest position. (Turn the fly wheel by hand toward you.)
2. Loosen needle clamp screw (A) and remove old needle.
3. Insert the needle into needle bar (B) with the flat side of the needle toward the fly wheel.

   CAUTION : Be sure the needle is all the way up. It should rest against the needle stop pin (C).
4. Tighten the needle clamp screw securely with screw driver.

   CAUTION : Check needle and make sure it is not bent or dull.

## 4. REMOVING BOBBIN CASE

1. Raise the needle bar to its highest position. (Turn the fly wheel toward you by hand.)
2. Open slide plate. With the left thumb and forefinger, open the latch (A) of the bobbin case (B).
3. Remove bobbin case from the spindle post (C). (Pull to the left.)

   NOTE : With the latch held open, the bobbin is locked inside the bobbin case. To remove bobbin from the bobbin case, release the latch.



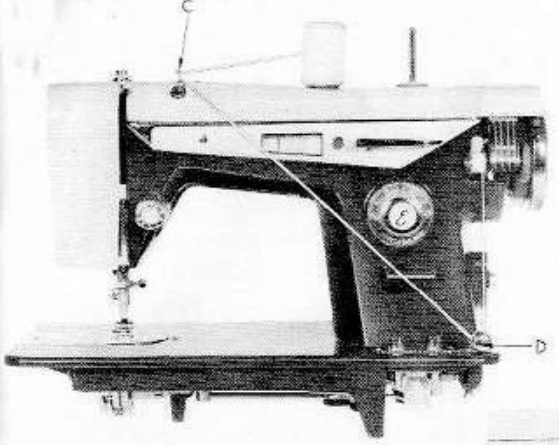



Fig. 8

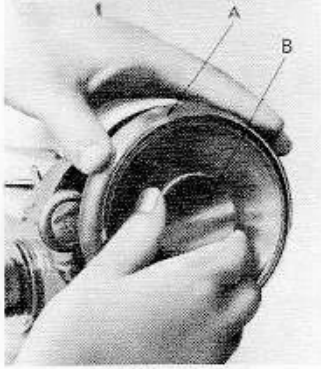



Fig. 7

## 5. WINDING BOBBIN

1. Hold the fly wheel (A) Fig. 7 with the left hand and turn the clutch (B) Fig. 7 toward you to release the clutch. By doing this, the fly wheel turns freely.

   NOTE : If the needle moves, the clutch is not completely released.

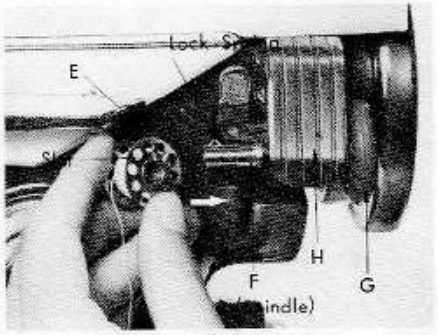



Fig. 9

2. Place thread on the spool pin and guide the thread through the upper thread guide (C) Fig. 8. Then bring the thread across the machine and under the bobbin winder thread guide (D) Fig. 8.
3. Wind the thread several times on the bobbin (E) Fig. 9. Now place the bobbin on the spindle (F) Fig. 9. of the bobbin winder.

   NOTE : The lock spring on the spindle must fit into the slot in the bobbin. This is done by holding the rubber ring (G) Fig. 9 with the right hand and turning the bobbin with the left hand until the lock spring slips into the slot of the bobbin.
4. Push the latch (H) Fig. 9 of the bobbin winder down until the rubber ring (G) Fig. 9 is brought in contact with the fly wheel.
5. Turn the fly wheel slowly toward you ; then operate the machine as in sewing. When the bobbin is full, it will stop.
6. Remove the bobbin from the spindle, then re-engage the machine by holding the fly wheel with the left hand and with the right hand turn the clutch away from you.

   NOTE : Make sure you tighten firmly.

## 6. ADJUSTING BOBBIN WINDER

1. If the thread winds unevenly on the bobbin as shown in Fig. 11 and 12, loosen screw (A) Fig. 13 and adjust the bobbin winder thread guide bracket (B) Fig. 13.
2. If the thread winds as in Fig. 11, move the bracket slightly to the left. If the thread winds as in Fig. 12, move the bracket slightly to the right.

Fig. 10 Fig. 11 Fig. 12

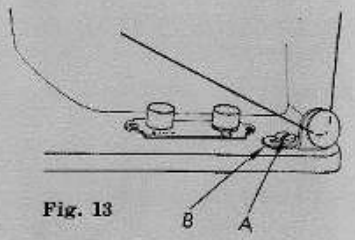



Fig. 13

## 7. THREADING BOBBIN CASE

1. Hold the bobbin case between the left thumb and forefinger with the slot up. With 5 or 6 inches of thread trailing in the palm, hold the bobbin between the thumb and first two fingers of right hand.
2. Insert the bobbin into the bobbin case, then pull the trailing thread into the slot, up to the left until it enters the delivery eye under the tension spring. There should be a slight tension on the thread as it pulls through the delivery eye.

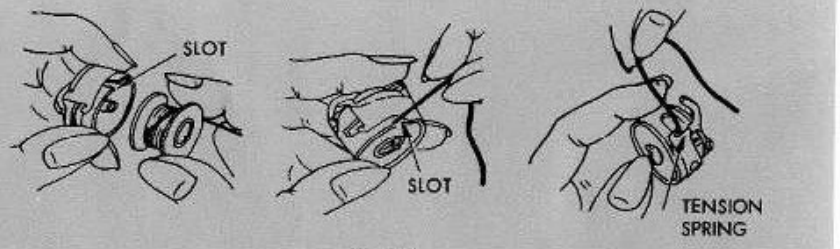



Fig. 14



## 8. REPLACING BOBBIN CASE

1. Turn fly wheel toward you by hand until the needle bar is at its highest position, and open the slide plate. Draw about 3 inches of thread from the bobbin and let it hang loosely from the bobbin case.
2. With the left thumb and forefinger, hold the latch (A) of the bobbin case (B) and place it on the spindle post (C). NOTE : The protruding finger (D) must slide into the delivery eye (E) at the top of the shuttle.
3. Release the latch and press the bobbin case to the right until it catches the groove on the spindle post.

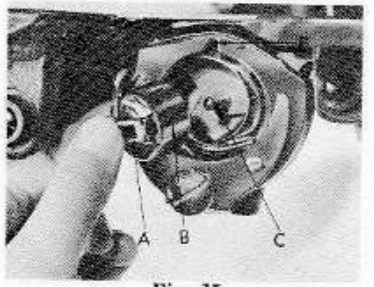



Fig. 15

## 9. THREADING MACHINE

1. Turn the fly wheel toward you and raise the take up lever (E) to its highest position. Place thread on the spool pin and bring the thread through the upper thread guide (A & A').
2. Bring the thread down through the thread guide to the tension disc (B) from right to left and up. Then pull the thread up through the thread take up spring (C).
3. Bring the thread through the thread tension guide (D) and thread the take up lever (E) from right to left.
4. Bring thread down through the thread guide (F) at the opening in the face plate, and through the needle bar thread guide (G) from behind. Thread the needle from left to right, leaving about 5 or 6 inches of thread.

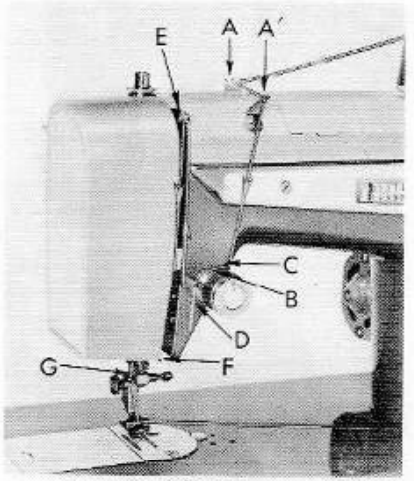



Fig. 16

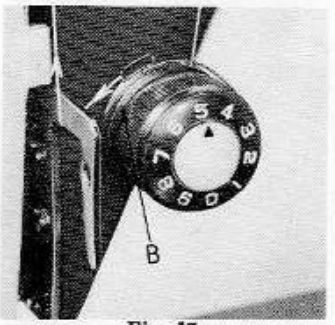



Fig. 17

## 10. PREPARING TO SEW

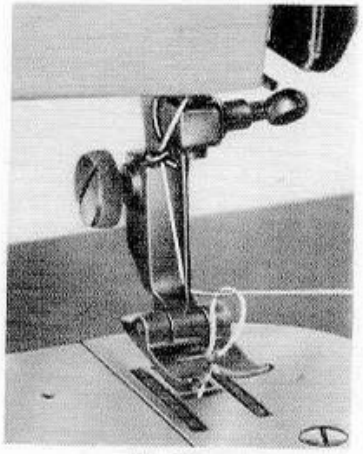


Fig. 18

1. Hold the loose end of the needle thread in your left hand, and turn the fly wheel toward you by hand until the needle moves down through the needle plate and up again to its highest position. Pull the needle thread gently, and the bobbin thread will come up with it through the hole in the needle plate. Then place both ends of the thread back between the toes of the presser foot.

   NOTE : If the bobbin thread does not rise, check to see if there is at least 3 or 4 inches of bobbin thread hanging loosely from the bobbin case.

2. Pull the two threads at least 5 inches behind the presser foot. Place material under presser foot, and lower the foot with the presser bar lifter. Regulate the stitch to the desired size and sew.

   TO REMOVE MATERIAL, raise the needle to its highest position and raise the foot with the presser bar lifter, then pull the fabric back and to the left. Cut the thread with the thread cutter behind presser bar, leaving a few inches of thread behind the presser foot.

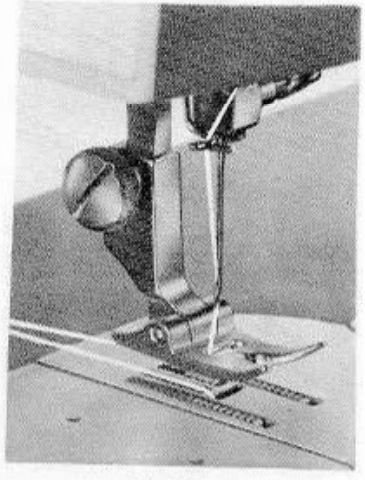


Fig. 19



## 11. ADJUSTING UPPER THREAD TENSION

The correct stitch can usually be obtained by varying the upper thread tension.
NOTE : TENSION ADJUSTMENT SHOULD BE MEDE WITH THE PRESSER FOOT DOWN.
To increase the tension, turn the tension dial clockwise (Fig. 20). To decrease the tension, turn the tension dial counter clockwise (Fig. 20). When the tension is properly adjusted, the upper and lower threads will cross in the center of the material (Fig. 21-A).
When the upper thread tension is too tight, or the bobbin tension is too loose, the lower thread will lay flat along the top of the material (Fig. 21-B).
When the upper thread tension is too loose or the bobbin tension too tight, the upper thread will lay flat along the bottom of the material (Fig. 21-C).
The tension should be adjusted little by little until the desired tension is obtained.

NOTE : Each machine varies, and the proper upper tension setting may be anywhere between one and six.
Adjust upper thread tension until proper tension is obtained for your particular machine.

Fig. 20

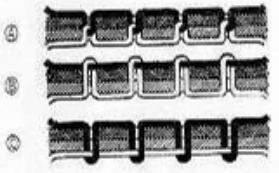



Fig. 21

## 12. ADJUSTING BOBBIN THREAD TENSION

1. The bobbin thread tension on your machine is correctly adjusted before leaving the factory. Therefore, it is seldom necessary to alter the bobbin thread tension. Should it become necessary to do so, the adjusting screw of the tension spring on the outside of the bobbin case can be tightened or loosened to increase or decrease the tension of the bobbin thread.
2. To increase the bobbin thread tension, turn the adjusting screw clockwise. To decrease tension of the bobbin thread, turn the adjusting screw counter clockwise.

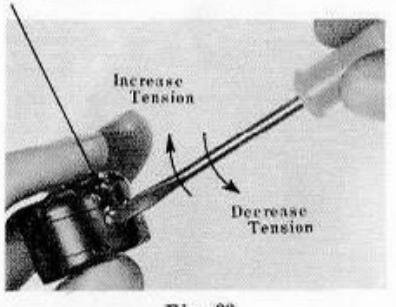



Fig. 22

## 13. ADJUSTING FABRIC FEEDERS

By using the push buttons you can adjust the fabric feeders for sewing different types of materials and other special sewing, such as embroidering or darning.

1. For ordinary sewing, press "UP" button all the way down. (This raises the fabric feeders to the up position)
2. For sewing very light fabrics, press "DOWN" button half way down so that the center line of the "UP" button appears on the plate.
3. To lower the fabric feeders below the surface of the needle plate, press the "DOWN" button all the way down. The fabric feeders are now in the down position, and you will be able to move your material freely in any direction, such as when you desire to embroider or darn. When embroidering and darning, remove the presser foot and use an embroidery hoop.

"UP" Position
Normal Fabrics

"MEDIUM" Position
Lightweight Fabrics

"DOWN" Position
Embroidering & Darning

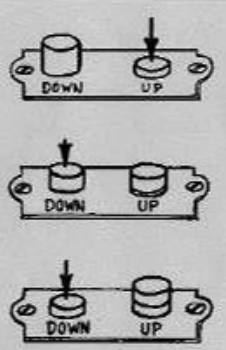



Fig. 23

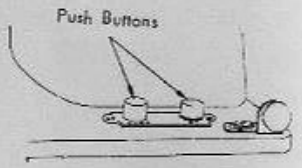



Fig. 24

## 14. ADJUSTING PRESSURE OF THE PRESSER FOOT

1. To release the pressure on the material, press down on the curled ring (A). (This will allow the built-in darner (B) to raise, thus releasing the pressure on the material.)
2. To increase the pressure on the material, press down on the built-in darner (B).
   NOTE : The built-in darner will stop at any position you desire.
3. For normal sewing, push built-in darner all the way down.
4. For darning and embroidering, release the built-in darner.
   CAUTION : Even though the presser foot is removed, make sure the presser bar lifter is in the down position.
5. Adjust the built-in darner to the proper position according to the thickness of the material you are using.



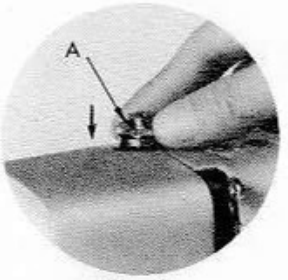



Fig. 25

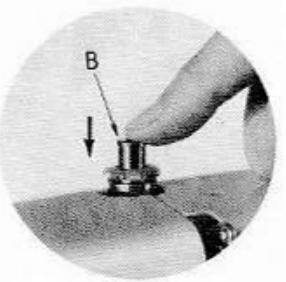



Fig. 26

## 15. REGULATING STITCH LENGTH

1. FORWARD—The number behind the stitch length indicator (A) indicates the number of stitches per inch.
   To sew at the desired stitch length, turn the stitch length dial (B) until the stitch length indicator (A) is directly in front of the number on the stitch length indicator plate (C).
   For normal sewing, turn the stitch length dial to ⇵12 in red. This means you will have 12 stitches per inch.
2. BUTTONHOLES—To adjust the stitch length for making buttonholes, set the stitch length indicator (A) to the letters BH in red on the stitch length indicator plate (C). This setting may also be used when you desire to make satin stitch designs.
3. REVERSE SEWING—When you desire to sew in reverse, push down on the reverse lever (D). When the reverse lever (D) is pushed all the way down, the reverse stitch length will be the same as it was when you were sewing forward.
   NOTE : When you release the reverse lever, it comes up and the machine will sew forward again.
   CAUTION : Do not set the stitch length indicator (A) on 0". When set in this position, the fabric feeders do not feed the material. This will cause the machine to break the thread.

Fig. 27

Fig. 28

## 16. ZIG ZAG SEWING

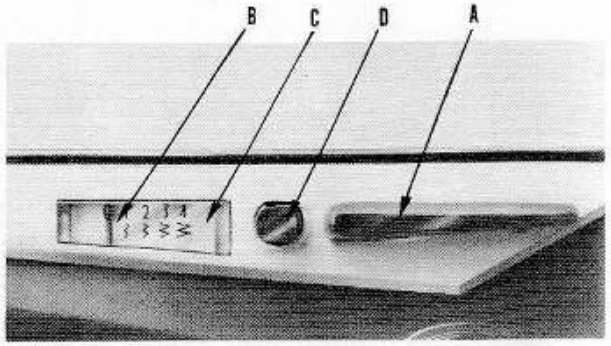



Fig. 29

## REGULATING WIDTH OF STITCH

The zig zag regulating lever (A) controls the width of the stitch. When you push down on the zig zag regulating lever, you will notice that the zig zag indicator (B) moves from "0" to the numbers 1, 2, 3, 4 on the zig zag indicator window (C).

When the zig zag indicator is at the position "0", the machine makes a straight stitch. As the zig zag indicator moves (by pushing down on the zig zag regulating lever) from "0" toward the numbers 1, 2, 3, 4, the with of the stitch will become progressively wider. The larger the number the wider the stitch.

NOTE : The zig zag regulating lever returns to the horizontal position when released.

CAUTION : It is not necessary to press in on the zig zag lock and release button (D) when operating the zig zag regulating lever.

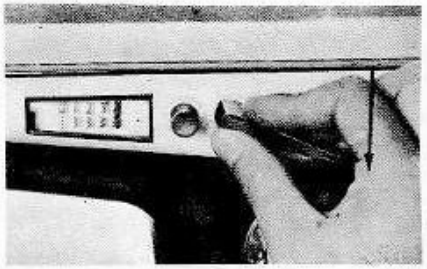


Fig. 30

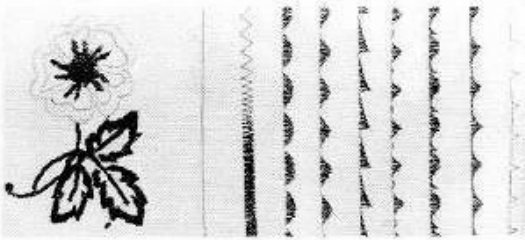


Fig. 31



## LOCKING ZIG ZAG REGULATING LEVER

To lock the zig zag regulating lever so that the machine sews a uniform stitch width, first press the zig zag regulating lever down until the zig zag indicator is behind the number on the zig zag indicator window that you desire.

While holding the zig zag regulating lever, press the zig zag lock and release button all the way in. Now release the zig zag lock and release button. (Fig. 32)

CAUTION : Do not release the zig zag regulating lever until after you have released the zig zag lock and release button.

You will notice that the zig zag indicator is locked on the number which the zig zag indicator was set behind. If the zig zag indicator is locked behind any number larger than "0" up to "3½", you will notice that when the zig zag regulating lever is pressed down, the zig zag indicator will move from that number to #4. When the zig zag regulating lever is released, the zig zag indicator will return to the number behind which it was locked. To release the zig zag regulating lever, press the zig zag lock and release button.

CAUTION : When you press the zig zag lock and release button, do not hold the zig zag regulating lever. (Fig. 33)

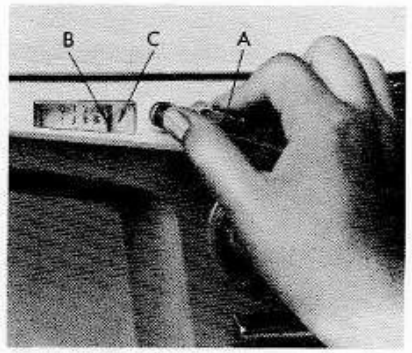



Fig. 32

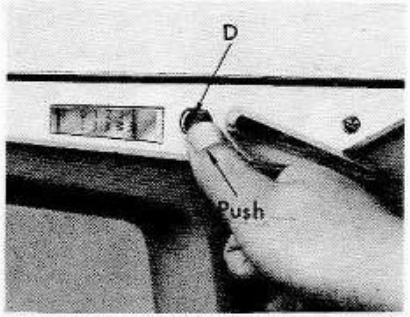



Fig. 33

## MAKING PATTERNS

By pressing the zig zag regulating lever down as you are sewing, the pattern formed will be as in Fig. 34. When you slowly release the zig zag regulating lever back to its horizontal position, you will form the pattern as in Fig. 35. By moving the zig zag regulating lever slowly from "0" to "4" and slowly back to "0" as the machine is sewing, you will form the pattern as in Fig. 36.

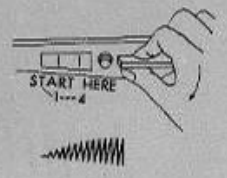



Fig. 34

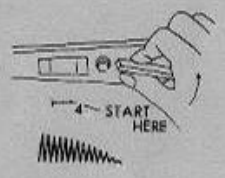



Fig. 35

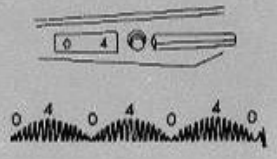



Fig. 36

You can form the pattern as in Fig. 37 by holding the zig zag regulating lever all the way down.

NOTE: The zig zag indicator will be on #4. You may lock the zig zag regulating lever in this position (Page 12)

You can form the pattern as in Fig. 38 by pressing down on the zig zag regulating lever until the zig zag indicator is on #2. (You may lock the stitch in this position. See Page 12.)

In order to form the pattern as in Fig. 39, first lock the zig zag indicator on #2, then press the zig zag regulating lever all the way down so that the zig zag indicator is on #4. Sew the desired number of stitches and while the machine is still running, quickly release the zig zag regulating lever. The machine will now sew a #2 zig zag stitch. Sew the number of stitches desired and quickly press the zig zag regulating lever all the way down. Sew the number of stitches desired and repeat.

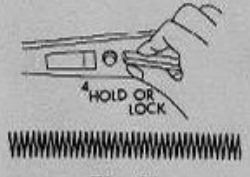



Fig. 37

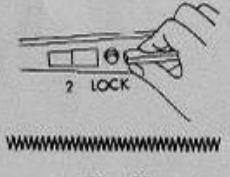



Fig. 38

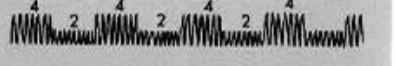



Fig. 39



You can form the pattern as in Fig. 40 by slowly pressing down on the zig zag regulating lever as the machine is running until the zig zag indicator is on #4, then quickly release the zig zag regulating lever and again slowly press down on the zig zag regulating lever. Repeat as often as desired.

In order to form the pattern as in Fig. 41, first press the zig zag regulating lever all the way down, and while running the machine slowly release the zig zag regulating lever until the zig zag indicator is on "0". When the zig zag indicator reaches "0", quickly press the zig zag regulating lever all the way down. Repeat as often as desired.

In order to make the pattern as formed in Fig. 42, with the zig zag indicator on "0", sew a straight stitch for the length desired; then while the machine is still running, quickly press the zig zag regulating lever all the way down. Sew the number of stitches desired and then quickly release the zig zag regulating lever. Repeat as often as desired.

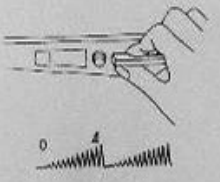



Fig. 40

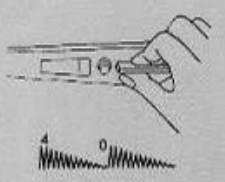



Fig. 41

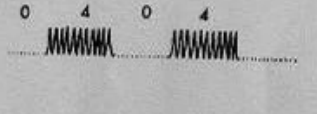



Fig. 42

NOTE: The above patterns are just a few of the numberous patterns that you will be able to make with your machine. By varying the speed with which you press down on the zig zag regulating lever and releasing the zig zag regulating lever at the same time varying the stitch length and; the number of stitches made, you will be able to create hundreds of different patterns.

CAUTION: When the machine is not sewing, do not press the zig zag regulating lever down unless the needle is raised out of the material. When making patterns, for best results, the machine should be sewing at a moderate rate of speed.

## CAM PATTERN DESIGNS

This machine has 24 designs and can sew various patterns by inserting cams in the machine and by changing the stitch length.
Moveover, very beautiful patterns can be obtained by using colorful threads.
The following charts show some typical patterns obtained by respective cams.
You can make desired patterns by using 24 cams in different stitch length with colorful threads.

1. First lock zig zag regulating lever (A) on #4.
2. Open the cam cover (B) and then insert a cam you desire into the cam shaft (C), and then close the cover.
3. Press the zig zag lock & release button (D).
4. Next run the machine and you will obtain the design on material as shown on next page.

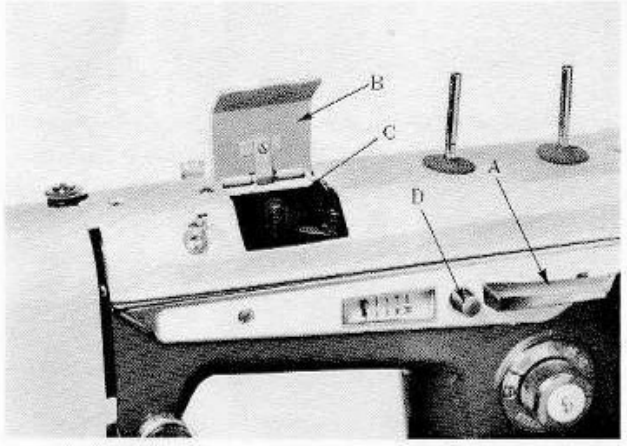



Fig. 43

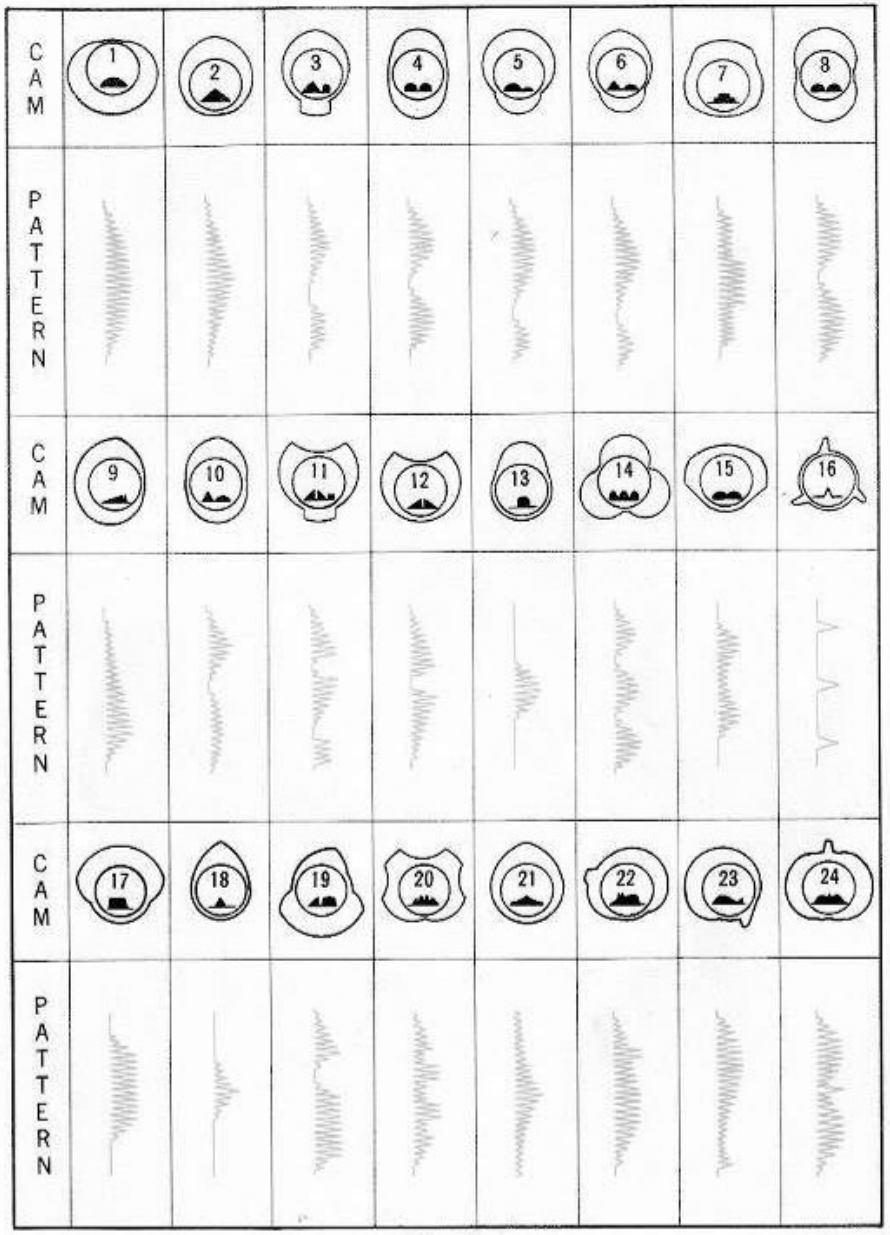



Fig. 44

## 17. CLEANING SHUTTLE AND RACE ASSEMBLY

In order to obtain the best possible performance from your machine, it is necessary from time to time to clean and oil the shuttle and race assembly.

REMOVING SHUTTLE

Remove needle, presser foot and needle plate. (See Page 1)

Raise the needle bar to its highest position and remove the bobbin case. Loosen thumb screw (A) located on race cover (B) and remove shuttle cover from the race assembly.

Take hold of the holder post (C) of the shuttle, and remove the shuttle from the race assembly.

Carefully clean the race assembly, making sure that you remove any thread or lint that may become trapped in the shuttle and race assembly. Also thoroughly clean the fabric feeders (D). This can be done with a stiff brush.

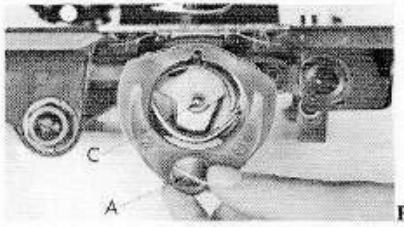


Fig. 45

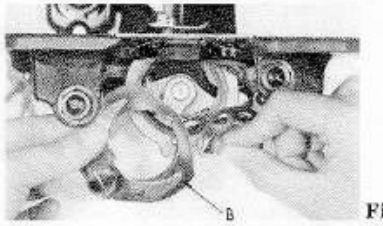


Fig. 46

REPLACING SHUTTLE IN RACE ASSEMBLY

Raise the needle bar to its highest position. With the left thumb and forefinger, take hold of the shuttle by the holder post. Turn the shuttle so that the open ends slide over the ends of the shuttle driver (E). Gently press in.

Take the race cover in your left hand. Place the race cover over the race assembly making sure that the two small posts on the race assembly fit into the small holes on the race cover. Tighten thumb screw.

CAUTION: Do not tighten the thumb screw with a screw driver. Tighten it snugly with the thumb and forefinger.

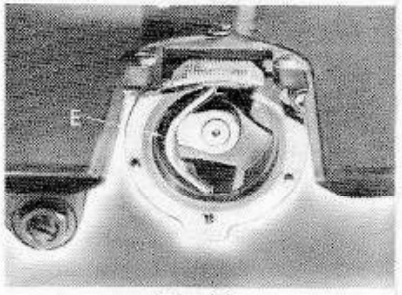


Fig. 48

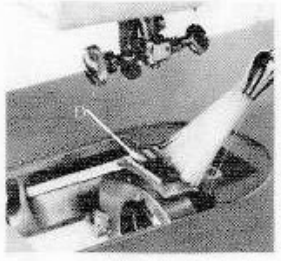


Fig. 47

Fig. 49



## 18. OILING THE MACHINE

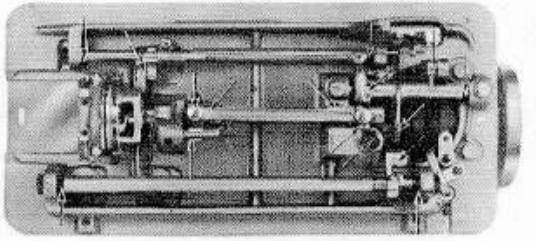


Fig. 50

As is the case with all precision machinery, it is necessary for maximum efficiency to properly oil and clean at reasonable intervals. Even though the machine is not in constant use, it is important to oil your machine since the oil will dry after standing over a period of time.

The underside of the machine should be oiled at the arrow points as shown in Fig. 50.

NOTE: Before oiling, clean away all lint or foreign matter. One or two drops are sufficient at each point.

The machine should be oiled at the arrow points as shown in Fig. 51. These parts are accessible by opening the face plate.

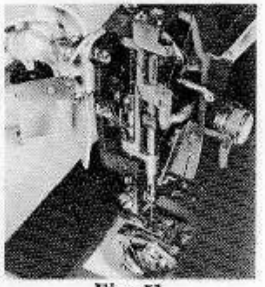


Fig. 51

To oil the top parts of your machine, remove the two screws (A & B) located at each end of the top cover (C). Remove top cover and oil the parts located at the arrow points as in Fig. 52.

NOTE: After you have cleaned and oiled your machine, it is advisable to run the machine at high speed so that the oil will penetrate all moving parts.

CAUTION: After cleaning and oiling machine, wipe away all excess oil, and sew on waste material.

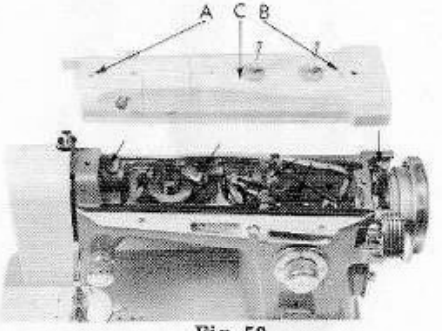


Fig. 52

## 19. BUILT IN LIGHT

Your machine is equipped with a built in sewing light, located inside the face plate. (Page 1-#19)

NOTE: Face plate is hinged (See Fig. 53) and opens from left to right.

The sewing light switch is located on the back of the face plate (See Page 2). The sewing light is a standard bulb and can be easily replaced.

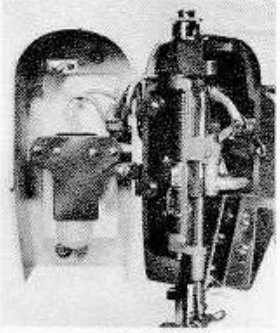


Fig. 53

## 20. ACCESSORIES

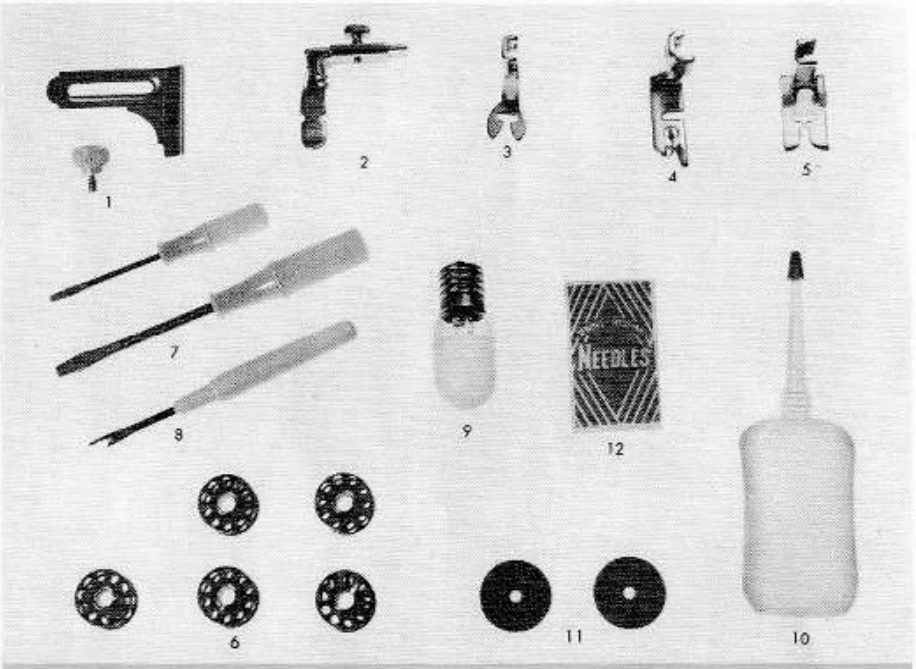



Fig. 54

1. Cloth Guide
2. Zipper Foot
3. Button Sewing Foot
4. Hemmer Foot
5. Buttonhole Foot
6. Bobbins
7. Screw Drivers
8. Seam Ripper
9. Bulb
10. Oil Can
11. Spool Pin Felt
12. Needles



## HOW TO USE PRESSER FEET

Your machine is equipped with various specialized feet which will enable you to do particular jobs with greater efficiency and obtain better results. Whenever you attach a new foot to the presser bar, make sure you tighten the screw securely with a screw driver.

### A. CLOTH GUIDE

Attach cloth guide to the bed of the machine (See Fig. 55). The cloth guide will enable you to make a straight stitch at a uniform distance from the seam. The cloth guide is adjustable, making it possible to make a straight stitch at various distances from the seam.

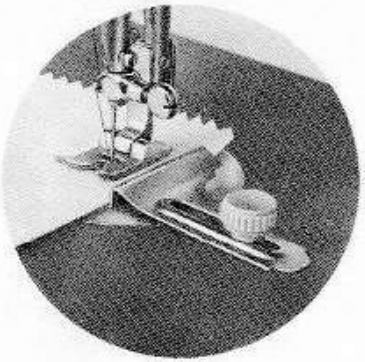


Fig. 55

### B. ZIPPER FOOT

Your machine is equipped with an adjustable zipper foot. Set the zipper foot on the left side as shown in Fig. 56. This will allow you to sew on the left side of zipper without danger of damaging the zipper or the needle. To sew on the right side of the zipper, adjust the zipper foot to the right side by loosening the screw located on the back of the zipper foot.

NOTE: When using the zipper foot, always sew with a straight stitch.

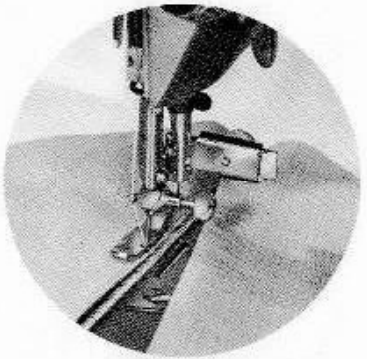


Fig. 56

## C. BUTTON SEWING FOOT

Attach button sewing foot to presser bar. Drop the fabric feeders below the needle plate by pushing the "DOWN" button. (See Page 9 - Fig. 23)

After the fabric is placed under the foot, put the button between the fabric and the button sewing foot. Slowly turn the fly wheel toward you by hand, passing the needle through the left eye of the button. When the needle is half way through the button, carefully, with the presser bar lifter, lower the button sewing foot on the button.

Turn the fly wheel by hand toward you until the needle raises out of the button to its highest position. Continue turning the fly wheel until the point of the needle is just above the button. Adjust the stitch width with the zig zag regulating lever.

NOTE: The needle will move from left to right.

When the needle is directly above the right eye of the button, lock the stitch width by pressing the zig zag lock and release button. (Page 12)

Run the machine at medium speed, making 6 or 7 stitches. Raise the needle out of the button. Press the lock and release button. Set the zig zag indicator at "0". Make several stitches through the left eye of the button. This will lock the stitches.

You will be able to sew on four eyed buttons by following the same procedure.

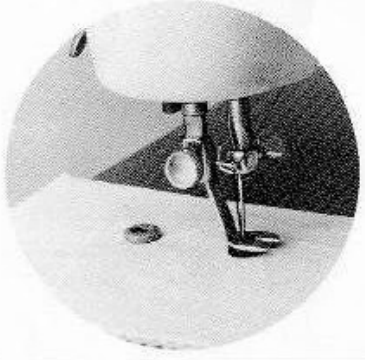


Fig. 57

## D. HEMMER FOOT

1. Straight Stitch Narrow Hem

   Attach the hemmer foot. Set the zig zag indicator at "0", then adjust the stitch length to medium size. (See Page 10)

   Fold the material over about 1/8 inch, then insert the fold beneath the hemmer into the scroll by moving the material back and forward gently and hem rolls into the scroll of the hemmer foot.

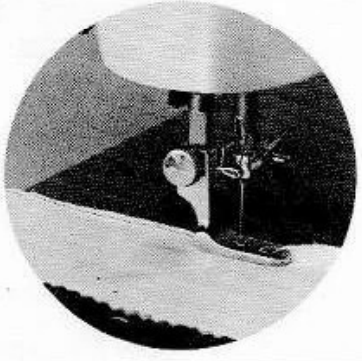
   After the material is properly inserted into the hemmer foot, pull the material toward you until the end of the material is just below the needle.

   Lower the presser bar, then sew the first few stitches slowly while holding the hem between the thumb and forefinger of the right hand.

   CAUTION: Do not feed the material too fast or too slow into the hemmer.

2. Narrow Rolled Edge

   Set zig zag indicator on #2, then follow same procedure as in making straight stitch narrow hem.



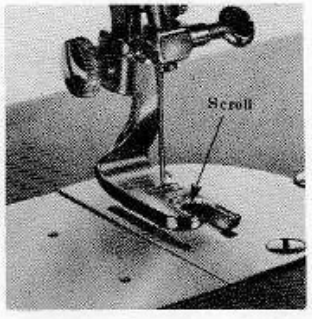



Fig. 58

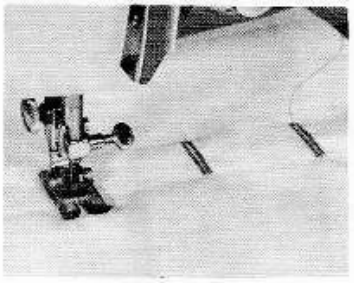


Fig. 59

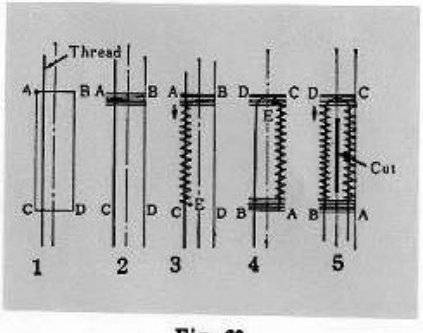



Fig. 60

## E. BUTTONHOLE FOOT

1. Attach buttonhole foot, and set stitch length indicator on BH (See Page 10 - #2)
2. Set zig zag indicator between 1 and 2 and lock into position. (See Page 12 - Fig. 32)
3. Push "DOWN" button to drop fabric feeders.
4. Place material under the foot so that when you start sewing you will sew from position A shown in Fig. 60 - #1. Lower the foot on to the material. Press the zig zag indicator lever down until the zig zag indicator is behind #3 on the zig zag indicator window (See Page 11 - Fig. 29) Then sew between A & B shown in Fig. 60 - #2, and make 4 or 5 stitches.
5. Raise the fabric feeders to up position. Release zig zag regulating lever so that the indicator returns to the position between 1 and 2.
6. Sew from A to C shown in Fig. 60 - #3. With the needle half way through the material on the left side of the zig zag stitch (Fig. 60 - #3E), using the needle as a pivot, turn the material in the opposite direction.
7. Lower the fabric feeders as in step #3. Turn the fly wheel toward you by hand until the needle is at its highest position. Press the zig zag regulating lever down until the indicator is behind #3. (See step #4). Sew from C to D as shown in Fig. 60 - #4. Release zig zag regulating lever so that the zig zag indicator returns to the position between 1 and 2.
8. Raise fabric feeders and sew between D and B as shown in Fig. 60 - #5. CAUTION: Sew between D and B carefully, being carefull not to overlap the two sides of the buttonhole.
9. With the ripper, cut the cloth between the two sides of the buttonhole. (Fig. 60 - #5)



## 21. BLIND HEMMING

1. Set stitch length dial to #12 in red.
2. Insert No. 16 cam.
3. Prepare the garment in the same manner as for hand hemming.

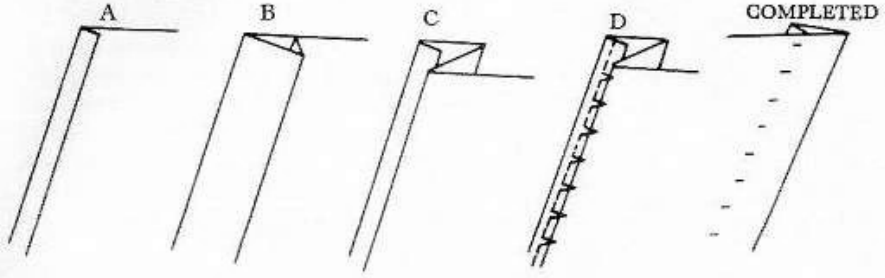



Fig. 61

A. If hem with folded edge is used, make first fold 3/8" deep.
B. Turn hem the depth desired and baste 1/4" from upper edge. Press in place.
C. Fold hem back toward left side of garment leaving 1/4" extended.
D. Place material under presser foot, with top folded edge to the right of the needle.

## 22. APPLIQUEING

1. Adjust the machine to a narrow zig zag stitch.
2. Set the stitch length to BH. Base material on to the article, then sew around the edges of the material.

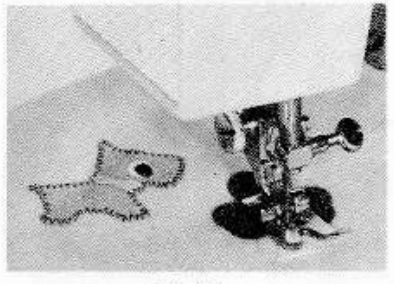


Fig. 62

## 23. EMBROIDERING AND MONOGRAMMING

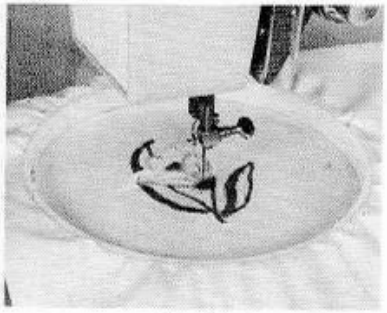


Fig. 63

1. Release pressure of presser foot. Lower fabric feeders. Lock zig zag indicator into position "2" behind the zig zag indicator window. Put material into embroidery hoop, then place under foot. Lower foot, then turn the fly wheel toward you by hand and raise the lower thread through the material so that both the upper and lower threads are on top of your material.
2. Sew at medium speed. Move material slowly so that the thread will be close together as in a satin stitch. With a little practice you will be able to do many types of designs and gain a great deal of pleasure from your machine.

## 24. DARNING

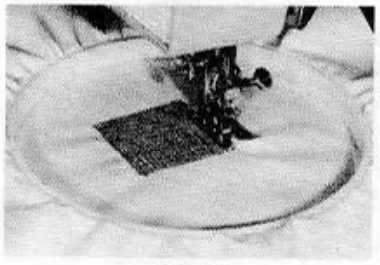


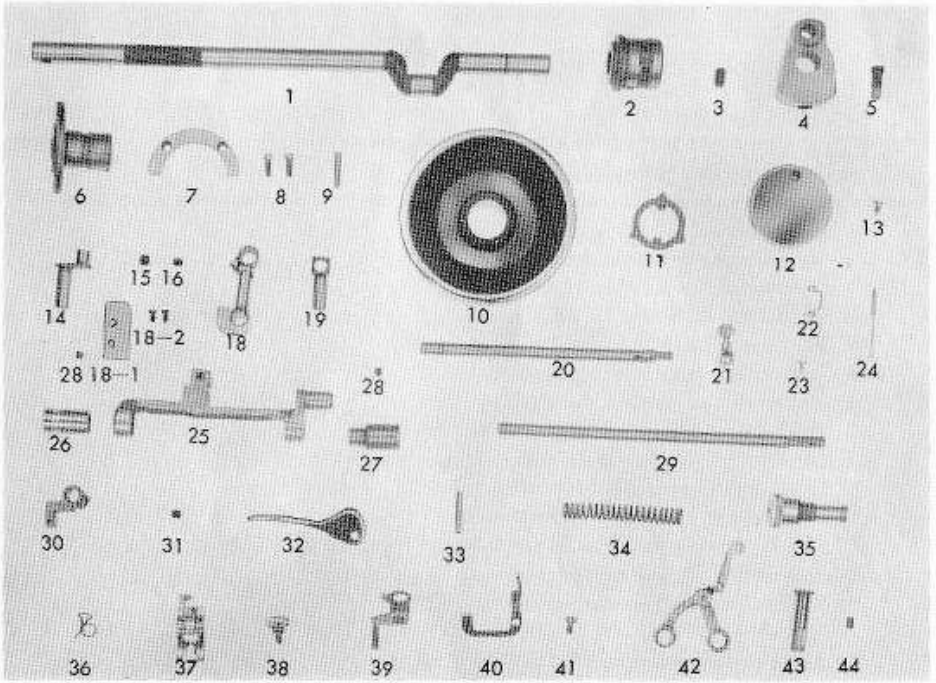
Fig. 64

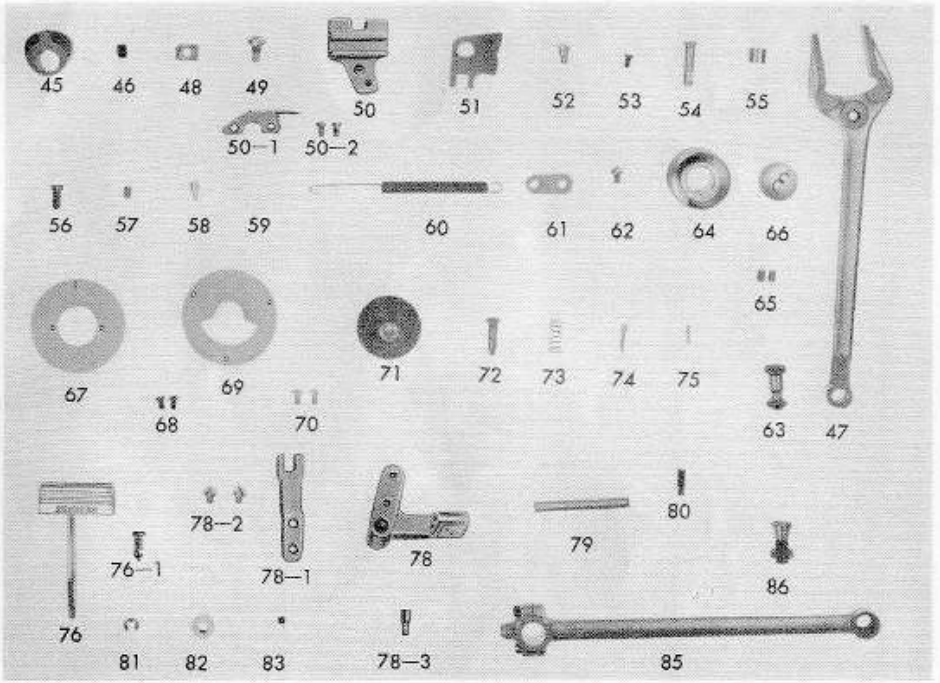
1. Release the pressure of the presser foot. Lower the fabric feeders, and place the material under the foot and lower the presser bar.
   NOTE: This enables you to move the material in any direction while the machine is running.
2. Sew around the areas you desire to darn. Then move the material back and forth, sewing out beyond the worn or open place in the material. Continue until the hole is covered, going both sideways and forward and back.
   NOTE: While darning, run the machine at medium speed.



## 25. CAUSES OF COMMON DIFFICULTIES

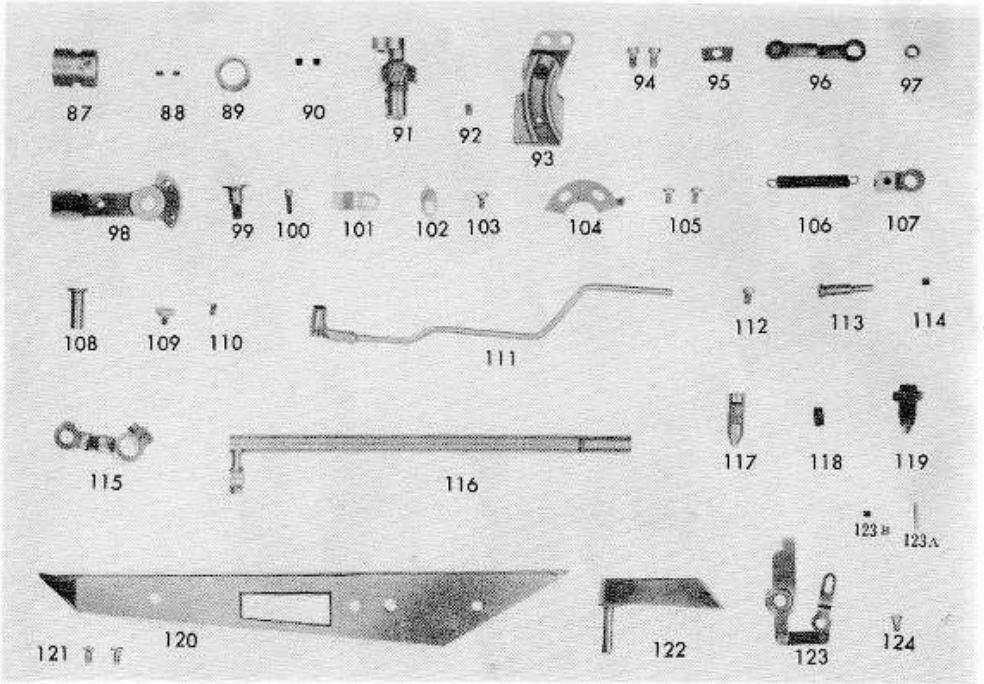

| | Page |
|---|---|
| NOTE: Clean and oil machine at regular intervals. | 18 |
| A. Machine Makes Noise | |
| 1. Thread jammed in race assembly. (Clean and oil shuttle and race assembly) | 17 |
| 2. Blunt needle. | |
| 3. Needle plate not placed in properly. | |
| 4. Slide plate not all the way to the right. | |
| B. BREAKING UPPER THREAD | |
| 1. Incorrect threading. | 6 |
| 2. Upper thread tension too tight. | 8 |
| 3. Lower thread tension too tight. | 8 |
| 4. Faulty needle, or needle placed incorrectly. | 3 |
| 5. Needle brushing against presser foot or other attachments. | |
| 6. Needle eye too small for thread used. | |
| 7. Starting the machine suddenly or with a jerk. | |
| 8. Starting the machine with the take up lever at its highest point. | |
| 9. Presser bar not lowered. | |
| 10. Thread jammed in race assembly. (Clean) | 17 |
| C. BREAKING THE LOWER THREAD | |
| 1. Incorrect threading of the bobbin case. | 5 |
| 2. Lower thread tension too tight. | 8 |
| 3. Bobbin wound too full or improperly. | 4 |
| 4. Rough edge in hole of needle plate. | |
| D. BREAKING THE NEEDLE | |
| 1. Pulling or holding the fabric while machine is running. | |
| 2. Using bent needle. | |
| 3. Needle not set in securely. (Tighten needle clamp screw with screw driver) | |
| E. SKIPPING STITCHES | |
| 1. Using bent or blunt needles. | |
| 2. Needle inserted incorrectly. | 3 |
| 3. Needle threaded improperly. | 6 |
| 4. Using wrong size needle. (Length - Use 15 × 1 needle) | |
| 5. Pressure of presser foot insufficient, especially when sewing heavy material. | |
| F. UNEVEN STITCHES | |
| 1. Presser foot not resting evenly on material. | |
| 2. Fabric feeders not high enough. | 9 |
| 3. Stitches too short. | 10 |
| 4. Pulling or holding the cloth while machine is running. | |
| 5. Using too fine a needle with too coarse a thread. | |
| 6. Upper and lower thread tensions not adjusted properly. | 8 |



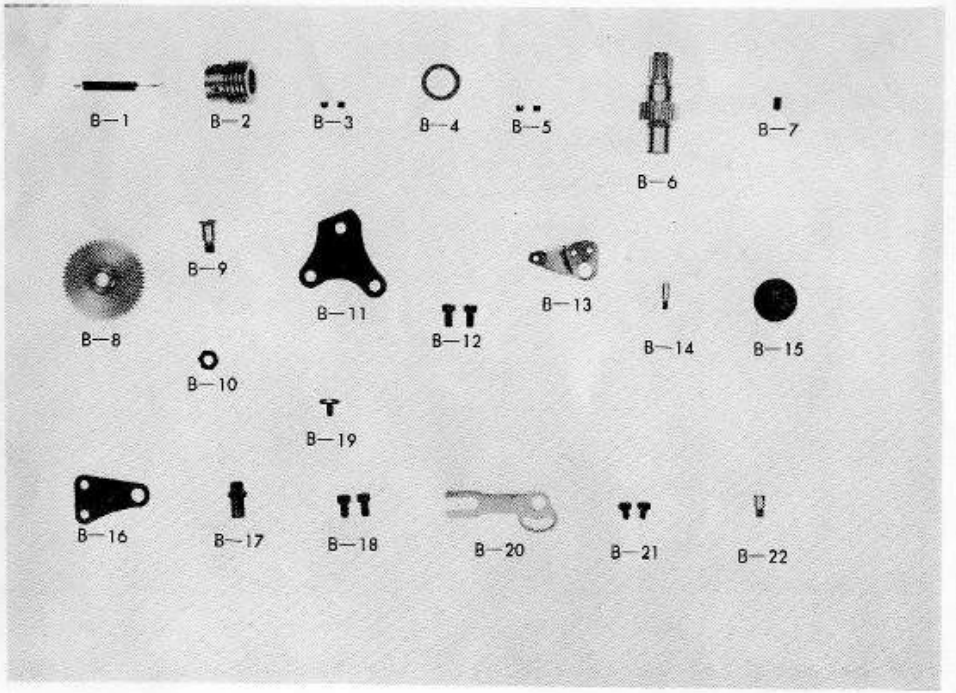

| Ref. No. | Cord No. | |
|---|---|---|
| 1. | 111101 | Arm Shaft |
| 2. | 51102 | Arm Shaft Bushing |
| 3. | 675 | Arm Shaft Bushing set Screw |
| 4. | 53103 | Thread Take-up Balance |
| 5. | 271 | Thread Take-up Balance set Screw |
| 6. | 124104 | Fly Wheel Bushing |
| 7. | 124105 | Fly Wheel Bushing Balance |
| 8. | 130 | Fly Wheel Bushing Balance set Screw |
| 9. | 711 | Fly Wheel Bushing Pin |
| 10. | 124106 | Fly Wheel |
| 11. | 801 | Stop Motion Washer |
| 12. | 281 | Stop Motion Screw |
| 13. | 220 | Stop Motion Stop Screw |
| 14. | 211143 | Thread Take-up Lever Link Crank Pin |
| 15. | 671 | Thread Take-up Lever Link Crank Pin Screw (A) |
| 16. | 670 | Thread Take-up Lever Link Crank Pin Screw (B) |
| 18. | 111107 | Needle Bar Crank Rod |
| 18-1. | 111174 | Needle Bar Crank Rod Restrictor |
| 18-2. | 113 | Set Screw for 111174 (2 pcs.) |
| 19. | 111108 | Needle Bar Connecting Stud |
| 20. | 1109 | Needle Bar |
| 21. | 1111 | Needle Clamp |
| 22. | 211407 | Needle Bar Thread Guide |
| 23. | 201 | Needle Bar Thread Guide set Screw |
| 24. | | Needle |
| 25. | 111171 | Needle Bar Swing Arm |
| 26. | 111172 | Presser Bar Bushing (Upper) |
| 27. | 111173 | Presser Bar Bushing (Lower) |
| 28. | 660 | Presser Bar Bushing set Screw (2 pcs.) |
| 29. | 1113 | Presser Bar |
| 30. | 52114 | Presser Bar Guide Bracket |
| 31. | 670 | Presser Bar Guide Bracket set Screw |
| 32. | 52115 | Presser Bar Lifter |
| 33. | 740 | Presser Bar Lifter Hinge Pin |
| 34. | 1117 | Presser Bar Spring |
| 35. | 1131 | Darner |
| 36. | 1118 | Thread Cutter |
| 37. | 111119 | Presser Foot for Zig-Zag Stitch |
| 38. | 232 | Presser Foot Thumb Screw |
| 39. | 111140 | Tension Releasing Lever |
| 40. | 111141 | Thread Loose Metal |
| 41. | 420 | Thread Loose Metal set Screw |
| 42. | 211142 | Thread Take-up Lever Complete |
| 43. | 51147 | Thread Take-up Lever Link Pin |
| 44. | 642 | Thread Take-up Lever Link Pin set Screw |

| | | |
|---|---|---|
| 45. | 1201 | Feed Cam |
| 46. | 674 | Feed Cam set Screw |
| 47. | 111202 | Forked Rod |
| 48. | 1203 | Feed Connecting Slide Block |
| 49. | 1205 | Feed Connecting Slide Block Screw |
| 50. | 56206 | Feed Regulator Complete |
| 50-1. | 56229 | Feed Regulator Spring Catcher |
| 50-2. | 113 | Set Screw for 56229 (2 pcs.) |
| 51. | 56271 | Feed Regulator Plate |
| 52. | 114272 | Feed Regulator Plate Pin |
| 53. | 113 | Feed Regulator Plate Pin set Screw |
| 54. | 56224 | Feed Regulator Hinge Pin |
| 55. | 212225 | Feed Regulator Hinge Pin Roller |
| 56. | 127 | Feed Regulator Hinge Pin set Screw |
| 57. | 642 | Feed Regulator Hinge Pin Roller set Screw |
| 58. | 56267 | Reverse Stitch Control Pin |
| 60. | 114232 | Feed Regulator Spring |
| 61. | 211233 | Feed Regulator Spring set Metal |
| 62. | 123 | Feed Regulator Spring set Metal Screw |
| 63. | 472 | Forked Rod Hinge Screw & Nut |
| 64. | 124243 | Stitch Length Dial |
| 65. | 642 | Stitch Length Dial set Screw (2 pcs.) |
| 66. | 124261 | Stitch Length Dial Cover Plate |
| 67. | 112262 | Stitch Length Indicator |
| 68. | 311 | Stitch Length Indicator set Screw (2 pcs.) |
| 69. | 124236 | Stitch Length Indicator Plate |
| 70. | 311 | Stitch Length Indicator Plate set Screw (2 pcs.) |
| 71. | 211238 | Stitch Length Regulating Cam |
| 72. | 211240 | Stitch Length Regulating Pin |
| 73. | 211241 | Stitch Length Regulating Spring |
| 74. | 112244 | Ratchet Pin |
| 75. | 211245 | Ratchet Spring |
| 76. | 112263 | Reverse Stitch Control |
| 76-1. | 221 | Set Screw for 112263 |
| 78. | 129264 | Reverse Stitch Control Arm |
| 78-1. | 56265 | Reverse Stitch Control Lever |
| 78-2. | 321 | Reverse Stitch Control Lever set Serew (2 pcs.) |
| 78-3. | 56267 | Reverse Stitch Control Lever Pin |
| 79. | 112268 | Reverse Stitch Control Shaft |
| 80. | 646 | Reverse Stitch Control Shaft set Screw |
| 81. | 850 | Reverse Stitch Control Snap Ring |
| 82. | 112269 | Reverse Stitch Control Stop Collar |
| 83. | 641 | Reverse Stitch Control Stop Collar set Screw |
| 85. | 1127 | Crank Connecting Rod |
| 86. | 580 | Crank Connecting Rod Hinge Screw & Nut |

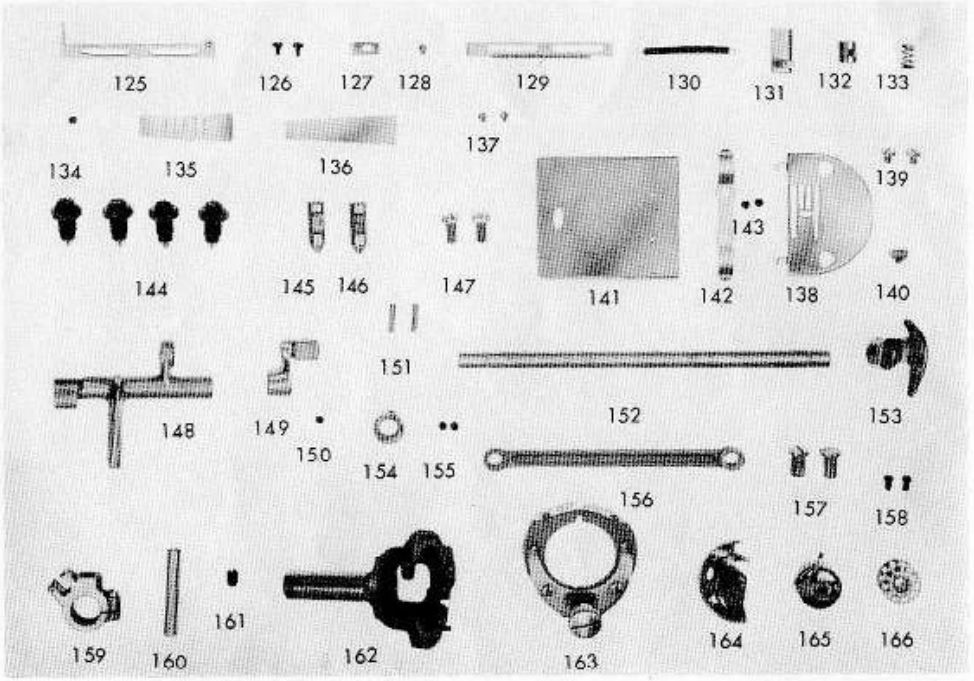


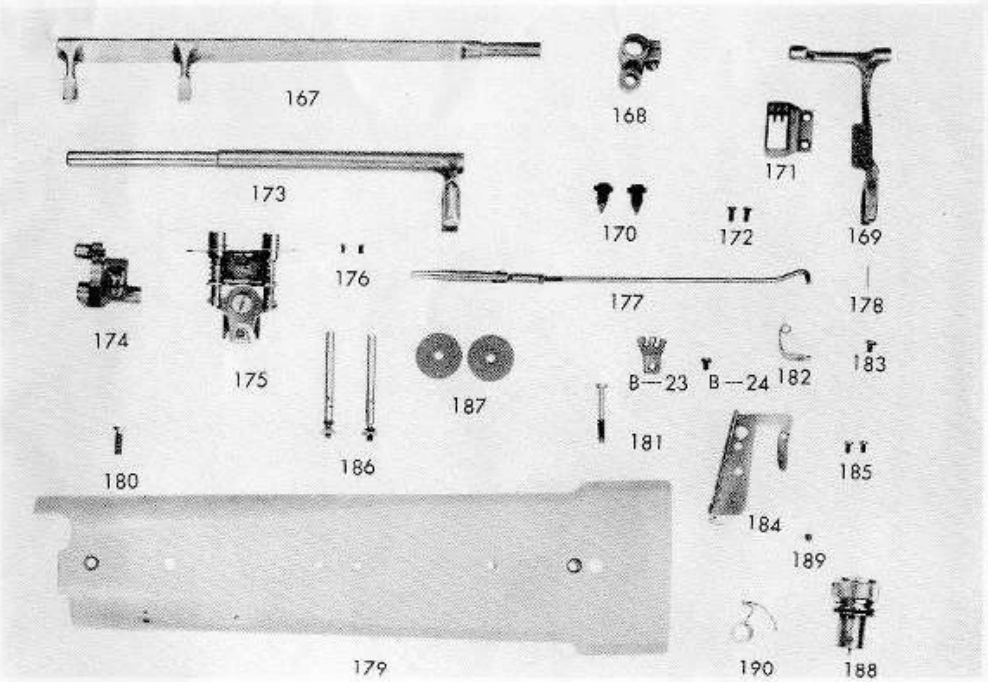

| | | |
|---|---|---|
| 87. | 111501 | Arm Shaft Screw Gear |
| 88. | 641 | Arm Shaft Screw Gear set Screw (2 pcs.) |
| 89. | 111502 | Arm Shaft Screw Gear Stop Collar |
| 90. | 641 | Arm Shaft Screw Gear Stop Collar set Screw (2 pcs.) |
| 91. | 352503 | Zig-Zag Cam Complete |
| 92. | 642 | Zig-Zag Cam Bushing set Screw |
| 93. | 115508 | Zig-Zag Cam Box Complete |
| 94. | 142 | Zig-Zag Cam Box set Screw (2 pcs.) |
| 95. | 352513 | Zig-Zag Cam Box Sliding Piece |
| 96. | 352514 | Zig-Zag Link |
| 97. | 111516 | Zig-Zag Width Adjustor Collar |
| 98. | 214519 | Zig-Zag Width Adjustor |
| 99. | 475 | Zig-Zag Width Adjustor Hinge Screw |
| 100. | 621 | Zig-Zag Width Adjustor Hinge Screw set Screw |
| 101. | 112520 | Zig-Zag Width Adjustor Stopper (1) |
| 102. | 112521 | Zig-Zag Width Adjustor Stopper (2) |
| 103. | 123 | Zig-Zag Width Adjustor Stopper (2) set Screw |
| 104. | 113522 | Zig-Zag Width Adjustor Plate |
| 105. | 123 | Zig-Zag Width Adjustor Plate set Screw (2 pcs.) |
| 106. | 211523 | Zig-Zag Width Adjustor Plate Spring |
| 107. | 111525 | Needle Bar Connecting Rod Bracket |
| 108. | 111526 | Vertical Shaft Link Pin |
| 109. | 129 | Vertical Shaft Link Pin Cover Screw |
| 110. | 622 | Vertical Shaft Link Pin set Screw |
| 111. | 217527 | Needle Bar Connecting Rod |
| 112. | 140 | Needle Bar Connecting Rod set Screw |
| 113. | 111530 | Needle Bar Connecting Rod Pin |
| 114. | 641 | Needle Bar Connecting Rod Pin set Screw |
| 115. | 112531 | Vertical Shaft Link |
| 116. | 112532 | Vertical Shaft |
| 117. | 701 | Vertical Shaft Center Pin |
| 118. | 674 | Vertical Shaft Center Pin set Screw |
| 119. | 681 | Vertical Shaft Center Screw & Nut |
| 120. | 112602 | Zig-Zag Control Base Plate |
| 121. | 340 | Zig-Zag Control Base Plate set Screw (2 pcs.) |
| 122. | 112603 | Zig-Zag Regulating Lever |
| 123. | 112606 | Zig-Zag Regulating Lever Link Complete |
| 123. A | 713 | Zig-Zag Regulating Lever Link set Pin |
| 123. B | 641 | Zig-Zag Regulating Lever Link Screw (1) |
| 124. | 421 | Zig-Zag Regulating Lever Link Screw (2) |





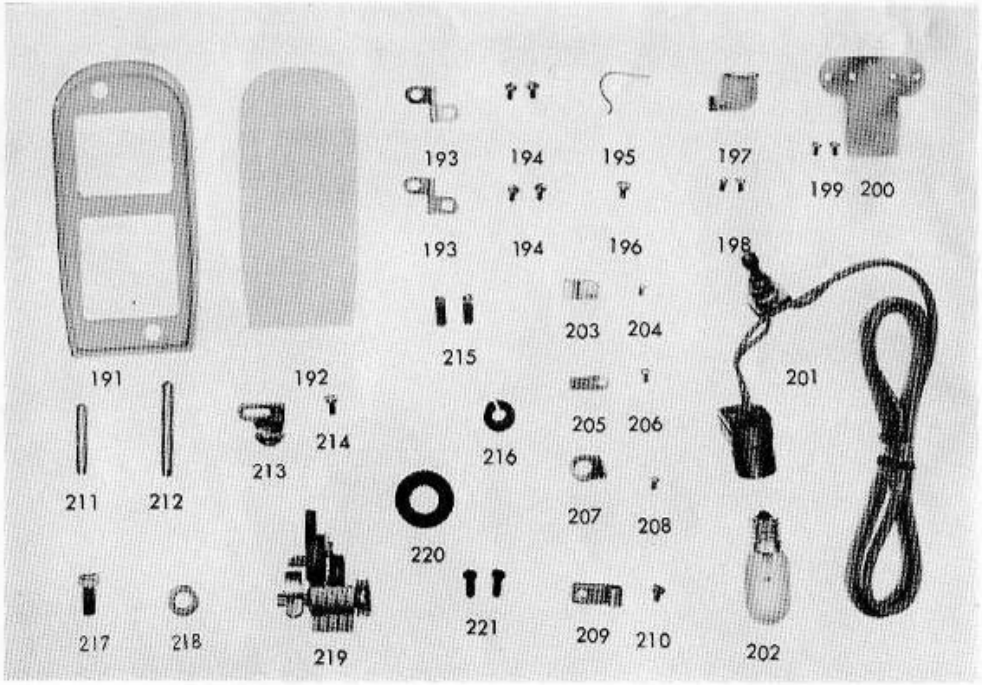

| | | |
|---|---|---|
| B- 1. | 217772 | Zig Zag Regulating Lever Spring |
| B- 2. | 211701 | Worm |
| B- 3. | 641 | Worm set Screw (2 pcs.) |
| B- 4. | 111502 | Worm Stop Collar |
| B- 5. | 641 | Worm Collar set Srcew (2 pcs.) |
| B- 6. | 211702 | Worm Gear Complete |
| B- 7. | 642 | Worm Gear Shaft Bushing set Screw |
| B- 8. | 211706 | Spur Gear Complete |
| B- 9. | 473 | Spur Gear Shaft |
| B-10. | 970 | Nut for 473 |
| B-11. | 211709 | Spur Gear Base |
| B-12. | 141 | Spur Gear Base set Screw (2 pcs.) |
| B-13. | 214715 | Pattern Cam Sliding Arm |
| B-14. | 510 | Pattern Cam Sliding Pin |
| B-15. | 132711 | Pattern Cam Base |
| B-16. | 214731 | Pattern Cam Sliding Arm Bracket |
| B-17. | 214716 | Pattern Cam Sliding Arm Shaft |
| B-18. | 141 | Pattern Cam Sliding Arm Bracket Set Screw (2 pcs.) |
| B-19. | 129 | Pattern Cam Sliding Arm Shaft set Screw |
| B-20. | 211717 | Pattern Cam Sliding Lever |
| B-21. | 123 | Pattern Cam Sliding Lever set Screw (2 pcs.) |
| B-22. | 540 | Pattern Cam Sliding Lever Pin |




| | | |
|---|---|---|
| 125. | 112612 | Zig-Zag Indicator |
| 126. | 403 | Zig-Zag Indicator set Screw (2 pcs.) |
| 127. | 112614 | Zig-Zag Indicator Stop Metal |
| 128. | 104 | Zig-Zag Indicator Stop Metal set Screw |
| 129. | 112615 | Zig-Zag Indicating Restrictor |
| 130. | 112616 | Zig-Zag Indicating Restrictor Spring |
| 131. | 112617 | Zig-Zag Lock & Release Button Shaft Complete |
| 132. | 112620 | Zig-Zag Lock & Release Button |
| 133. | 112621 | Zig-Zag Lock & Release Button Spring |
| 134. | 640 | Zig-Zag Lock & Release Button set Screw |
| 135. | 112622 | Zig-Zag Indicator Plate |
| 136. | 112623 | Zig-Zag Indicator Reflecting Plate |
| 137. | 104 | Zig-Zag Indicator Reflecting Plate set Screw (2 pcs.) |
| 138. | 111302 | Needle Plate |
| 139. | 143 | Needle Plate Guide Screw (2 pcs.) |
| 140. | 144 | Needle Plate set Screw |
| 141. | 1303 | Slide Plate |
| 142. | 1304 | Slide Plate Back Spring |
| 143. | 102 | Slide Plate Back Spring set Screw (2 pcs.) |
| 144. | 681 | Center Screw & Nut (4 pcs.) |
| 145. | 701 | Oscillating Rock Shaft Center Pin (1) |
| 146. | 702 | Oscillating Rock Shaft Center Pin (2) |
| 147. | 170 | Oscillating Rock Shaft Center Pin set Screw (2 pcs.) |
| 148. | 1305 | Oscillating Rock Shaft |
| 149. | 111306 | Oscillating Rock Shaft Crank Complete |
| 150. | 641 | Oscillating Rock Shaft Crank set Screw |
| 151. | 712 | Lower Shaft Taper Pin (2 pcs.) |
| 152. | 111311 | Lower Shaft |
| 153. | 111312 | Shuttle Driver |
| 154. | 111343 | Lower Shaft Collar |
| 155. | 641 | Lower Shaft Collar set Screw (2 pcs.) |
| 156. | 111533 | Race Connecting Rod |
| 157. | 111534 | Race Connecting Rod Pin (2 pcs.) |
| 158. | 121 | Race Connecting Rod Pin set Screw (2 pcs.) |
| 159. | 111535 | Race Guide |
| 160. | 111536 | Race Guide Shaft |
| 161. | 673 | Race Guide Shaft set Screw |
| 162. | 124316 | Race |
| 163. | 124318 | Race Cover |
| 164. | 111324 | Shuttle |
| 165. | 111325 | Bobbin Case |
| 166. | 111913 | Bobbin |

| | | |
|---|---|---|
| 167. | 1332 | Feed Rock Shaft |
| 168. | 1333 | Feed Rock Shaft Crank |
| 169. | 111334 | Feed Bar |
| 170. | 680 | Feed Bar Center Screw & Nut (2 pcs.) |
| 171. | 111335 | Fabric Feeders |
| 172. | 112 | Fabric Feeders set Screw (2 pcs.) |
| 173. | 1336 | Feed Lifting Rock Shaft |
| 174. | 211350 | Fabric Feeders Control Button Body |
| 175. | 124368 | Fabric Feeders Control Buttons |
| 176. | 310 | Fabric Feeders Control Buttons set Screw (2 pcs.) |
| 177. | 211354 | Fabric Feeders Control Buttons Connecting Rod |
| 178. | 750 | Fabric Feeders Control Buttons Connecting Pin. |
| 179. | 124011 | Top Cover |
| 180. | 146 | Top Cover set Screw (1) |
| 181. | 147 | Top Cover set Screw (2) |
| B-23. | 219401 | Upper Thread Guide (1) |
| B-24. | 321 | Upper Thread Guide (1) set Screw |
| 182. | 124401 | Upper Thread Guide (2) |
| 183. | 120 | Upper Thread Guide (2) set Screw |
| 184. | 119406 | Thread Tension Guide |
| 185. | 113 | Thread Tension Guide set Screw (2 pcs.) |
| 186. | 211150 | Spool Pin (2 pcs.) |
| 187. | 1902 | Spool Pin Felt (2 pcs.) |
| 188. | 124420 | Thread Tension Regulator |
| 189. | 642 | Thread Tension Regulator set Screw |
| 190. | 211427 | Thread Take Up Spring |




| | | |
|---|---|---|
| 191. | 119031 | Face Plate |
| 192. | 119041 | Face Plate Cover Plate |
| 193. | 211942 | Face Plate Hinge (2 pcs.) |
| 194. | 123 | Face Plate Hinge set Screw (4 pcs.) |
| 195. | 52040 | Face Plate set Spring |
| 196. | 123 | Face Plate set Spring set Screw |
| 197. | 119043 | Face Plate set Spring Catcher |
| 198. | 113 | Face Plate set Spring Catcher set Screw (2 pcs.) |
| 199. | 113 | Light Reflecting Plate set Screw (2 pcs.) |
| 200. | 112066 | Light Reflecting Plate |
| 201. | 211060 | Lamp Assembly |
| 202. | 211956 | Bulb |
| 203. | 112081 | Cord set Metal (1) |
| 204. | 113 | Cord set Metal (1) set Screw |
| 205. | 112082 | Cord set Metal (2) |
| 206. | 113 | Cord set Metal (2) set Screw |
| 207. | 211083 | Cord set Metal (3) |
| 208. | 113 | Cord set Metal (3) set Screw |
| 209. | 51084 | Cord set Metal (4) |
| 210. | 123 | Cord set Metal (4) set Screw |
| 211. | 1128 | Oil Pipe (1) |
| 212. | 55128 | Oil Pipe (2) |
| 213. | 1410 | Bobbin Winder Thread Guide |
| 214. | 124 | Bobbin Winder Thread Guide set Screw |
| 215. | 270 | Hinge set Screw (2 pcs.) |
| 216. | 1087 | Cord Bush |
| 217. | 181 | Motor set Screw |
| 218. | 820 | Motor set Screw Washer |
| 219. | 112450 | Bobbin Winder |
| 220. | 1458 | Bobbin Winder Rubber Ring |
| 221. | 162 | Bobbin Winder set Screw (2 pcs.) |



## M E M O